

Materials Laboratory Library Selected New Acquisitions June 2006

PRINT BOOKS & REPORTS

Enclosures for Electrical Equipment (1000 Volts Maximum). National Electrical Manufacturers Association, 2003. NEMA 250-2003.
R 621.3104 ENCLOSU 2003

Laboratory and Field Evaluations of Snow Plowable Raised Pavement Markers (June 2004 Product Submissions). AASHTO, 2006. NTPEP no. 5007.1.
AASHTO NTPEP 5007.1

Significance of Tests and Properties of Concrete and Concrete-making Materials. ASTM International, 2006. STP 169D.
620.136 SIGNIFI 2006

State Highway Log Planning Report 2005B. Washington State Dept. of Transportation, 2006.
388.1097 STATE H 2005B

2006 WSDOT Telephone Directory. Washington State Dept. of Transportation, 2006.
R 388.0257 WASHING 2006

ELECTRONIC BOOKS & REPORTS

CalNail - A Design Tool for Soil Nail Projects Using Field Case Histories. California Dept. of Transportation, 2006.
http://www.dot.ca.gov/hq/research/researchreports/reports/2006/calnail_final_report_6-12-06.pdf

Development of Load and Resistance Factor Design (LRFD) Specifications for Horizontally Curved Steel Girder Bridges. Transportation Research Board, 2006. NCHRP Report no. 563.
http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_563.pdf

Duration of Spring-Thaw Recovery for Aggregate-Surfaced Roads. Minnesota Dept. of Transportation, 2006.
<http://www.lrrb.org/PDF/200612.pdf>

Innovative Load Testing Systems. Transportation Research Board, 2006. NCHRP Web-Only Document no. 84.
http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_w84.pdf

Long-Term Pavement Performance Inventory Data Collection Guide. Federal Highway Administration, 2006. FHWA-HRT-06-066

<http://www.fhwa.dot.gov/pavement/ltp/pubs/06066/06066.pdf>

Seismic Analysis of Retaining Walls, Buried Structures, Embankments, and Integral Abutments. New Jersey Dept. of Transportation, 2006.

<http://www.state.nj.us/transportation/refdata/research/reports/FHWA-NJ-2005-002.pdf>

Solidification/Stabilization of Soft River Sediments Using Deep Soil Mixing. New Jersey Dept. of Transportation, 2006.

<http://www.state.nj.us/transportation/refdata/research/reports/FHWA-NJ-2005-028.pdf>

NEW TITLES ON CIVIL ENGINEERING NET BASE

<http://www.civilengineeringnetbase.com/>

Geotechnical Engineering Investigation Handbook.

The Geotechnical Engineering Investigation Handbook provides the tools necessary for fusing geological characterization and investigation with critical analysis for obtaining engineering design criteria. The second edition updates this pioneering reference for the 21st century, including developments that have occurred in the twenty years since the first edition was published, such as:

- Remotely sensed satellite imagery
- Global positioning systems (GPS)
- Geophysical exploration
- Cone penetrometer testing
- Earthquake studies
- Digitizing of data recording and retrieval
- Field and laboratory testing and instrumentation
- Use of the Internet for data retrieval

Geotechnical Engineering Investigation Handbook, Second Edition is a comprehensive guide to a complete investigation: study to predict geologic conditions; test-boring procedures; various geophysical methods and when each is appropriate; various methods to determine engineering properties of materials, both laboratory-based and in situ; and formulating design criteria based on the results of the analysis. The author relies on his 40 years of professional experience, emphasizing identification and description of the elements of the geologic environment, the data required for analysis and design of the engineering works, and procuring the data.

By using a practical approach to problem solving, this book helps engineers consider geological phenomena in terms of the degree of their hazard and the potential risk of their occurrence.

Hilbert-Huang Transform in Engineering.

Data used to develop and confirm models suffer from several shortcomings: the total data is too limited, the data are non-stationary, and the data represent nonlinear processes. The Hilbert-Huang transform (HHT) is a relatively new method that has grown into a robust tool for data analysis and is ready for a wide variety of applications.

This text presents the first thorough presentation of the formulation and application of the Hilbert-Huang Transform (HHT) in engineering. After an introduction and overview of recent advances, thirty leading international experts explore the use of the HHT in areas such as oceanography, nonlinear soil amplification, and non-stationary random processes. One chapter offers a comparative analysis between HHT wavelet and Fourier transforms, and another looks at the HHT applied to molecular dynamic simulations. The final chapter provides perspectives on the

theory and practice of HHT and reviews applications in disciplines ranging from biomedical, chemical, and financial engineering to meteorology and seismology.

The Hilbert-Huang Transform in Engineering features a variety of modern topics, and the examples presented include wide-ranging, real-life engineering problems. While the development of the HHT is not yet complete, this book clearly demonstrates the power and utility of the method and will undoubtedly stimulate further interest, theoretical advances, and innovative applications.

Handbook of Structural Engineering.

Continuing the tradition of the best-selling Handbook of Structural Engineering, this second edition is a comprehensive reference to the broad spectrum of structural engineering, encapsulating the theoretical, practical, and computational aspects of the field. The authors address a myriad of topics, covering both traditional and innovative approaches to analysis, design, and rehabilitation.

The second edition has been expanded and reorganized to be more informative and cohesive. It also follows the developments that have emerged in the field since the previous edition, such as advanced analysis for structural design, performance-based design of earthquake-resistant structures, lifecycle evaluation and condition assessment of existing structures, the use of high-performance materials for construction, and design for safety.

Additionally, the book includes numerous tables, charts, and equations, as well as extensive references, reading lists, and websites for further study or more in-depth information. Emphasizing practical applications and easy implementation, this text reflects the increasingly global nature of engineering, compiling the efforts of an international panel of experts from industry and academia. This is a necessity for anyone studying or practicing in the field of structural engineering.

New to this edition

- Fundamental theories of structural dynamics
- Advanced analysis
- Wind and earthquake-resistant design
- Design of prestressed concrete, masonry, timber, and glass structures
- Properties, behavior, and use of high-performance steel, concrete, and fiber-reinforced polymers
- Semirigid frame structures
- Structural bracing
- Structural design for fire safety

Handbook of Highway Engineering.

Modern highway engineering reflects an integrated view of a road system's entire lifecycle, including any potential environmental impacts, and seeks to develop a sustainable infrastructure through careful planning and active management. This trend is not limited to developed nations, but is recognized across the globe. Edited by renowned authority T.F. Fwa, The Handbook of Highway Engineering provides a comprehensive, up-to-date treatment of all aspects of highway development and engineering. Its three sections range from consideration of socio-economic and environmental factors to design, construction, maintenance, and management.

Beginning with financing, access management, environmental impacts, road safety, and noise, the book explores the expanded responsibilities of the modern highway engineer as well as the increasing trend toward privatization of project development and financing. The next section considers technical issues in highway and pavement engineering, including materials, new mechanistic-empirical design approaches, and new closed-form solutions for backcalculation as

well as deflection and stress computation in multi-slab systems. Rounding out the discussion, the final section examines construction, management, performance evaluation including nondestructive testing, and a chapter devoted to highway asset management.

Featuring contributions from eminent experts representing eight countries on four continents, The Handbook of Highway Engineering supplies all of the tools needed to manage the entire integrated process of modern highway development and engineering.

Damage Mechanics.

Before a structure or component can be completed, before any analytical model can be constructed, and even before the design can be formulated, you must have a fundamental understanding of damage behavior in order to produce a safe and effective design. Damage Mechanics presents the underlying principles of continuum damage mechanics along with the latest research. The authors consider both isotropic and anisotropic theories as well as elastic and elasto-plastic damage analyses using a self-contained, easily understood approach.

Beginning with the requisite mathematics, Damage Mechanics guides you from the very basic concepts to advanced mathematical and mechanical models. The first chapter offers a brief MAPLE® tutorial and supplies all of the MAPLE commands needed to solve the various problems throughout the chapter. The authors then discuss the basics of elasticity theory within the continuum mechanics framework, the simple case of isotropic damage, effective stress, damage evolution, kinematic description of damage, and the general case of anisotropic damage. The remainder of the book includes a review of plasticity theory, formulation of a coupled elasto-plastic damage theory developed by the authors, and the kinematics of damage for finite-strain elasto-plastic solids.

From fundamental concepts to the latest advances, this book contains everything that you need to study the damage mechanics of metals and homogeneous materials.